Space Weather Forecast

Issued on Tuesday, 13 August 2024 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1-G2/Minor to Moderate geomagnetic storms likely day 1 and possible day 2 with ongoing Coronal Mass Ejection (CME) arrivals. Further Moderate-class flares expected with a slight chance of isolated Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with two low level Moderate-class flares observed in the past 24 hours. There are nine sunspot regions visible on the disc. There are three large and complex spots on the disk, two in the southwest and one in the northeast. All other spots are smaller and stable.
No Earth-directed coronal mass ejections were observed in available imagery.
Solar Wind / Geomagnetic Activity: Solar wind parameters were already showing a previous coronal mass ejection enhancement, and were indicative of at least one further coronal mass ejection arrival during the period. Solar wind speeds have eased from elevated to slightly elevated levels. The Interplanetary Magnetic Field was generally moderate to strong. The north-south component, Bz, was mostly negative. Geomagnetic activity was at G1/Minor Storm (Kp 5) to G4/Severe storm (Kp8) levels.
Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast, with occasional Moderate-class flares expected and a slight chance of isolated Strong-class flares.
Solar Wind /Geomagnetic Activity: Ongoing coronal mass ejection impacts are expected to wane day 1 before the arrival of up to two glancing coronal mass ejections during day 1, with speeds becoming elevated again. No further enhancements are currently expected days 3 and 4 with speeds gradually declining back to slightly elevated or background.
Geomagnetic activity is expected to fall from current G1/Minor storm or G2/Moderate Storm (Kp 5-6) levels to Active before the possible arrival of up to two glancing CMEs during day 1, with further occasional G1-G2/Minor to Moderate Storming (Kp 5-6) intervals likely and a slight chance of a further G3/Strong Storm (Kp 7) interval. This risk decreases going into days 2, 3 and 4 (14-16 Aug), with activity expected to decline towards Quiet to Unsettled levels (Kp 2-3).
Energetic Particles / Solar Radiation: A heightened risk of flare activity brings the slight chance of reaching or exceeding Minor Radiation Storm levels should any significant flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	90	50	20	20
Strong	G3	Yes	20	15	1	1
Severe	G4	Yes	10	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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